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10/583,156	06/16/2006	Hideki Takamatsu	128387	8989

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EXAMINER	
DAGER, JONATHAN M	

ART UNIT	PAPER NUMBER
3663	

NOTIFICATION DATE	DELIVERY MODE
01/26/2010	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No.	Applicant(s)	
	10/583,156	TAKAMATSU ET AL.	
	Examiner	Art Unit	
	JONATHAN M. DAGER	3663	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *20 October 2009*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-36* is/are pending in the application.

4a) Of the above claim(s) *2-6,15,19-23 and 32* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,7-14,16-18,24-31 and 33-36* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments, see page 25 filed 20 October 2009, with respect to the objections to the drawings under 37 C.F.R. 1.84(p)(5) have been fully considered and are persuasive due to replacement drawings and amendments to the specifications. No new matter has been introduced. Therefore, the objections to the drawings under 37 C.F.R. 1.84(p)(5) have been withdrawn.

2. Applicant's arguments, see page 25 filed 20 October 2009, with respect to the rejection of clam 18 under 35 U.S.C. 112, 2nd paragraph, have been fully considered and are persuasive due to amendment. Therefore, the rejection of clam 18 under 35 U.S.C. 112, 2nd paragraph has been withdrawn.

Subsequently, the prior rejections of all claims dependent therefrom under identical grounds due to dependency and similar terminology are withdrawn.

3. Applicant's arguments, see pages 25-26 filed 20 October 2009, with respect to the rejection of claims 1 and 18 under 35 U.S.C. 102(b) have been fully considered and are persuasive due to amendment. Therefore, the rejection of claims 1 and 18 under 35 U.S.C. 102(b) has been withdrawn.

Subsequently, the prior art rejections of all claims dependent therefrom are withdrawn.

However, upon further consideration, new grounds of rejection are warranted (see below).

Claim Rejections - 35 USC § 102

4. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 1, 7-9, 13, 16, 18, 24-26, 30, and 33 are rejected under 35 U.S.C. 102(b) as being anticipated by Tashiro (US 2002/0016659).

Regarding claim 1, 13, 16, 18, 30, and 33, Tashiro discloses an integrated vehicle control system is a system for integratedly controlling an engine 2 (driving force generator) and an automatic transmission (a multi-stage transmission; hereinafter referred to simply as "AT"), which are components of a vehicle drive system. The system also controls brakes 5 as a component of a vehicular braking system. As component control units used in the present invention, there are provided an engine ECU 6 (power control unit), an ATECU 7 (transmission control unit) and a brake ECU 8 (brake control unit) for controlling the engine 2, AT 4 and brakes 5, respectively. Further, as a manager control unit used in the present invention there is provided a manager ECU 10 which issues operation guide commands to the engine ECU 6, ATECU 7 and brake ECU 8 for operation of the engine 2, AT4 and brakes 5 (para 0088).

Thus, it is disclosed a vehicle integrated control system comprising a plurality of control units operating autonomously for controlling a running state of a vehicle, the plurality of control units comprising at least a driving system (engine or transmission ECUs) control unit that controls an acceleration of the vehicle, and a brake system control unit (transmission or brake ECUs) that controls the stopping of a vehicle.

Tashiro discloses that when the ACC switch is OFF, it is determined that the vehicle driver wants to drive the vehicle by his or her own operation, and a requested front-back acceleration is set according to the amount of depression of the accelerator pedal detected by the accelerator pedal opening sensor or the amount of depression of the brake pedal detected by a brake stroke sensor (para 0103).

In an entire vehicle operation determining unit in the first hierarchical level, a vehicular front-back acceleration (also referred to as "requested front-back acceleration") which is requested is set according to information on operations performed by the vehicle driver such as the depression of the accelerator pedal or the brake pedal, information on vehicular operations such as vehicle speed and engine load, which are input through the general information communication line L2 from the engine ECU 6, and traveling environment information input from the radar sensor 9 and indicative of a positional relation to a vehicle traveling ahead (para 0101).

Thus, it is disclosed that each driving system control unit and brake system control unit comprises a sensing unit for sensing an operation request with respect to at least one control unit.

Tashiro discloses that the engine ECU 6, ATECU 7 and brake ECU 8 are for controlling the engine 2, AT 4 and brakes 5, respectively. In the ECUs 6, 7 and 8 are also incorporated signal input/output units 6c, 7c and 8c, respectively, for inputting detected signals from various sensors which detect the states of the engine 2, AT 4 and brakes 5 and for outputting drive signals to actuators provided respectively in the engine 2, AT 4 and brakes 5 (para 0090).

Thus, it is disclosed a controller for manipulating an actuator set in correspondence with each control unit. Further, it is disclosed a controller for controlling the vehicle by generating a

control target (torque), calculated based on a sensed request, and the appropriate actuator with be controlled.

Tashiro discloses that the communication line L1 for important information transmits important information provided from the manager ECU 10 to the ECUs 6, 7 and 8 and also transmits important information provided from one of the ECUs 6, 7and 8 to the other ECUs directly without going through the manager ECU 10 (para 0096).

Thus, it is disclosed how the processing unit generates information processed such that the information can be used to modify the operation the operation request of the control target, as well as sharing the sensed request among all other control units.

As cited above, Tashiro discloses that a manager control unit used in the present invention there is provided a manager ECU 10 which issues operation guide commands to the engine ECU 6, ATECU 7 and brake ECU 8 for operation of the engine 2, AT4 and brakes 5 (para 0088). A requested front-back acceleration is set according to ON/OFF of an ACC switch which selects execution or non-execution of ACC (Adaptive Cruise Control), the ACC being a vehicular travel control performed according to a relation to a front vehicle measured by the radar sensor 9 (para 0102). Tashiro further defines ACC operation wherein a vehicle-to-vehicle distance between a host vehicle and another vehicle traveling ahead is measured and the driving and braking force of this vehicle are controlled according to the thus-measured vehicle-to-vehicle distance, thereby maintaining an appropriate vehicle-to-vehicle distance. More particularly, when the vehicle traveling ahead decelerates suddenly or when a vehicle breaks into the front of this vehicle at a very short distance, the control decelerates the vehicle rapidly for preventing a rear-end collision. When this control is made by the engine control for example, the throttle valve is

fully closed to diminish the driving force if the engine is in operation. If the control for deceleration is made by a transmission control, the gear shift range (change gear ratio) is switched to a low speed. Further, if brake control is used, brakes are applied (para 0007).

Thus, it is disclosed a processor unit operating in parallel with each control unit for generating and providing each said control unit information used to modify the operation request or said control target, as necessary, in each control unit. Further, it is disclose from the above that the parallel processing unit (manager ECU) comprises an ACC sub-unit generating information as to be shared among the various control units.

Therefore, Tashiro discloses all embodiments of independent claims 1 and 18.

Regarding claims 7 and 24, in addition to that which is cited above, Tashiro discloses At the front of the vehicle is installed a radar sensor 9 (radar system) of a known structure which utilizes, for example, ultrasonic wave, radio wave, laser beam, or infrared rays. With the radar sensor 9, it is possible to measure a relative distance between the vehicle and an object ahead of the vehicle and also measure in which direction the object is present. Information from the radar sensor 9 is input to the communication unit in the manager ECU 10 through a communication line L' (para 0094).

Thus, it is disclosed a traveling environmental sensor (radar sensor), a first sensing sub-unit for sensing information relating to the driver (brake and pedal stroke sensors), and a processing sub-unit generating information processed such that said sensed information is shared among each of said control unit (APU and communication unit communicating over L1, L2 lines).

Regarding claims 8, 9, 25, and 26, Tashiro discloses that the communication line L1 for important information transmits important information provided from the manager ECU 10 to the ECUs 6, 7 and 8 and also transmits important information provided from one of the ECUs 6, 7and 8 to the other ECUs directly without going through the manager ECU 10 (para 0096).

Thus, from the above combined citations, the parallel processor (manager ECU) is configured for generating information representing a degree of correction with respect to a request of said driver at each said control unit. Further, the above combined citations discloses that the information can be shared among the various ECUs for implementation of ACC.

Regarding claim 28, in addition to that which is cited above, Tashiro discloses that to the signal input/output unit 6c in the engine ECU 6 are connected sensors and switches such as an accelerator pedal opening sensor for detecting the amount of depression of an accelerator pedal by a driver of the vehicle, an air flow meter for detecting the flow rate (intake volume) of intake air, an intake air temperature sensor for detecting the temperature of intake air, a throttle opening sensor for detecting the degree of opening of a throttle valve, an oxygen concentration sensor for detecting the concentration of oxygen contained in exhaust gas, a knocking sensor for detecting knocking, a water temperature sensor for detecting the temperature of cooling water, a crank angle sensor for detecting a rotational angle and a rotational speed of a crank shaft, and an ignition switch. Also connected to the signal input/output unit 6c in the engine ECU 6 are various actuators for controlling the engine such as an injector provided for each cylinder in the engine 2, an igniter for generating high voltage for ignition, a fuel pump for pumping fuel from a

fuel tank and supplying it to the injector, and a throttle valve driving motor for opening and closing a throttle valve installed in an intake pipe of the engine 2 (para 0091).

To the signal input/output unit 7c in the ATECU 7 are connected sensors and switches such as a revolution sensor for detecting the number of revolutions of an input shaft from a torque converter as a constituent of AT4 to the transmission, a vehicle speed sensor for detecting the vehicle speed from the rotation of a vehicle drive shaft connected to an output shaft of AT 4, an oil temperature sensor for detecting the temperature of hydraulic oil present within the AT 4, a shift position switch for detecting a shift position of a shift lever which is operated by the vehicle driver, and a stop lamp switch for detecting the state of a stop lamp which turns ON upon braking by the vehicle driver. Various actuators (solenoids) for AT control are also connected to the signal input/output unit 7c in the ATECU 7, such as a shift solenoid for switching over shift ranges, a line pressure solenoid for operating an engaging force of a shift clutch, and a lock-up pressure solenoid for operating a clamping force of a lock-up clutch which clamps together input and output shafts of a torque converter (para 0092).

Thus, the control target can be modified or established based on the vehicle speed.

Claim Rejections - 35 USC § 103

5. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

6. Claims 10, 12, 14, 17, 27, 29, 31 and 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tashiro, as applied to claims 1, 9, 11, 18, 26, and 28 (see above), and further in view of Dominke (US 6,154,688).

Regarding claims 10, 12, 27, and 29, Tashiro, as cited above, does not explicitly anticipate a processor configured to generate a degree of arbitration with respect to the control targets.

Dominke teaches the accelerator pedal with which the driver formulates the propulsion command is preferably arranged in the component drive train. A brake pedal is purposefully arranged in the system "vehicle movement" and there in the second hierarchical level of the component "drive train and brake" for the component "brake". Operator-controlled elements, which are arranged in a higher hierarchical level, are operator-controlled elements which operate on several systems (for example, the ignition lock). This is to be assigned, for example to the coordinator "total vehicle", in the first hierarchical level of the total structure (column 10 lines 2-12).

Thus, the system of Dominke is configured to sense information relating to the driver of the vehicle (e.g. acceleration request), and provide an arbitration with respect to control target at each control unit. Further, the above provides for the execution of an operation is controlled with respect to a hierarchy corresponding to a request of the driver towards a lower control hierarchy corresponding to each actuator.

Tashiro has disclosed a base invention which is capable of all functions of the claimed embodiments. Where Tashiro is deficient, with respect to said claims is that Tashiro does not explicitly disclose arbitration functions with respect to the vehicle control units. Dominke cures the deficiency in a similar invention wherein a hierarchal model is used for arbitration between issued commands.

Thus, since both inventions both disclose/teach similar elements and usage, it would have been obvious to one of ordinary skill in the art at the time of the invention to simply substitute one apparatus into the other, or at least combine their respective elements, to achieve no more than the predictable result of conflict resolution in vehicle controls with respect to priority of the commands being issued.

Combining prior art elements according to known methods to yield predictable results is a rationale to support a conclusion of obviousness. See MPEP 2143(A).

Simple substitution of one known element for another to obtain predictable results will support a conclusion of obviousness. See MPEP 2143 (B).

Regarding claims 14 and 31, Tashiro and Dominke, as combined above, teaches that a command, in this context, is understood to be an input of objectives and peripheral conditions. The command issuance takes place from the command generator to the command receiver. The responsibility to execute a command is connected to the issuance of the command or, if this is not possible, a feedback must take place. A feedback is information which one component (command receiver) sends to another component (command generator) with reference to the specific command. Feedbacks can be status feedbacks, conflict feedbacks or result feedbacks which, in addition to a value, can also be provided with a suggestion for further processing (Dominke at column 3 lines 66-67, column 4 lines 1-10).

Thus, if a conflict in commands issued occurs, feedback is given to the issuing component.

Regarding claims 17 and 34, Tashiro and Dominke, as combined above, teaches that six hierarchical levels are provided. The first hierarchical level is defined by the components: the driver, assistance systems (for example, road speed controller, distance controller, et cetera), traffic guidance systems and/or navigation systems. These individual components issue commands to a second hierarchical level to which a coordinating element for the vehicle is assigned. This coordinating element forms further commands from the commands supplied thereto for the following: steering, a coordinating element "drive train and brake" and, if required, for suspension control. These three elements are arranged in a third hierarchical level. The coordinating element "drive train and brake" converts the command issued thereto into commands for a fourth hierarchical level wherein respective coordinating elements are arranged for the drive train and the brake control. The coordinating element for the drive train in the fourth hierarchical level converts the command supplied thereto into commands for the fifth hierarchical level wherein clutch control and transmission control as well as a coordinating element for the engine are provided. The coordinating element for the engine converts the commands supplied from the coordinating element "drive train" into commands for a sixth hierarchical level wherein control elements for the following are arranged: the air supply, injection and ignition of the internal combustion engine (Dominke at column 2 lines 46-67, column 3 lines 1-3).

Thus, it is taught a third ECU configured for steering control, as well as the control hierarchy, ECU parallel structure, and a fourth ECU (see Dominke “coordinator”, fig. 7, first

hierarchal level) configured for operating over an interface with the other ECUs (Dominke's data bus).

7. Claims 35 and 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tashiro, as applied to claims 1 and 18 above, and further in view of Shimizu (US 5,925,082).

Regarding claims 35 and 36, Tashiro discloses that to the signal input/output units 8c in the brake ECU 8 are connected sensors and switches such as a master cylinder pressure sensor for detecting an oil pressure of a master cylinder in each brake 5, a steering sensor for detecting a vehicular steering angle, and a yaw rate sensor for detecting a yaw rate of the vehicle. Also connected thereto is a brake actuator for generating a hydraulic pressure in the master cylinder for brake control (para 0093).

Thus, it is taught sensing an operation request (steering angle) by Tashiro, as well as sharing among the vehicle control units information for implementation of the ACC.

Still, Dominke does not explicitly teach generating a control target with respect to the sensed steering request.

Shimizu teaches a vehicle steering control system, comprising: manual steering input means for manually actuating a steering system of a vehicle; an actuator for providing a supplemental steering torque to the steering system; actual direction detecting means for detecting an actual traveling direction of the vehicle; target direction determining means for defining a target traveling direction of the vehicle; deviation computing means for determining a deviation of the actual traveling direction from the target traveling direction; control means for controlling the actuator so as to reduce the deviation determined by the deviation computing

means; and alertness determining means for determining an alertness of an operator of the vehicle from an operating condition of the vehicle; the control means increasing a command torque for the actuator for a given value of the deviation with a decline in the alertness of the vehicle operator (column 1 lines 65-67, column 2 lines 1-15).

Thus, it is taught by Shimizu sensing a user request, generating a target, and manipulating an actuator in response.

The prior art of Tashiro discloses most functions of the claimed embodiments. Where it is deficient, with respect to claims 35 and 36 is that it does not explicitly disclose a controller for setting a steering target with respect to user input. Shimizu cures the deficiency in a vehicle control system.

Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the steering functions of Shimizu onto the invention of Tashiro, since both systems could be used in combination to produce the predictable result of coordinating the braking, driving, and steering control units of the vehicle for improved stability.

Combining prior art elements according to known methods to yield predictable results is a rationale to support a conclusion of obviousness. See MPEP 2143(A).

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JONATHAN M. DAGER whose telephone number is (571)270-1332. The examiner can normally be reached on 0830-1800 (M-F).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jack Keith can be reached on 571-272-6878. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JD
15 January 2010

/Jack W. Keith/
Supervisory Patent Examiner, Art Unit 3663